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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/753,115

01/06/2004

Abbas Ismail Attarwala

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02/08/2005

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EXAMINER

OWENS, DOUGLAS W

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/753,115

Applicant(s)

ATTARWALA, ABBAS ISMAIL

Examiner

Douglas W. Owens

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 48-58 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-30 and 44-47 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 31-34 and 37-43 is/are rejected.
- 7) ☒ Claim(s) 9, 11, 35 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the invention of group I, claims 1 – 47 in the reply filed on November 23, 2004 is acknowledged.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it exceeds 150 words.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 contains the trademark/trade name "FR-4". Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe the material of the bonding member and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 – 6, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Application Publication No. 2002/0158335 to Towle et al.

Regarding claim 1, Towle et al. teach an electronic package substrate for an electronic package (Fig. 1), comprising:

an adhesive bonding member (14) having two planar surfaces and an orifice there through for receiving a chip (12); and

a circuitized member (16,18) having two planar surfaces, one surface being bonded to one of the planar surfaces of the bonding member, said circuitized member being electrically connectable to the chip.

Regarding claim 2, Towle et al. teach an electronic package substrate further including a solder terminal (shown in Fig. 1) electrically connected to a planar surface of the circuitized member.

Regarding claim 3, Towle et al. teach an electronic package substrate, wherein the bonding member is a structural support for the substrate.

Regarding claim 4, Towle et al. teach an electronic package, wherein the bonding member is fabricated from a glass-fiber-reinforced/filled epoxy resin (paragraph [0019], lines 12 – 17).

Regarding claim 5, Towle et al. teach an electronic package substrate, wherein the bonding member is fabricated from FR-4 (paragraph [0019], lines 12 – 18).

Regarding claim 6, Towle et al. teach an electronic package substrate package, wherein the bonding member is fabricated from BT resin (paragraph [0019], lines 12 – 18).

Regarding claim 8, Towle et al. teach an electronic package substrate, wherein the bonding member is electrically conductive (paragraph [0019]).

Regarding claim 10, Towle et al. teach an electronic package substrate, wherein the bonding member is electrically nonconductive (paragraph [0019], lines 12 – 17).

8. Claims 31 – 33, 37 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No 6,488,806 to Carden et al.

Regarding claims 31 and 33, Carden et al. teach an electronic package (Fig. 4), comprising:

an adhesive bonding member (10) having two planar surfaces and an orifice there through;

a circuitized member (2) bonded to one of the planar surfaces and blocking the orifice, thereby forming a cavity for receiving a flip chip (4); and

Carden et al. inherently teach an array of solder pads on the circuitized member, since they would be required for the array of solder balls (6).

Regarding claims 32 and 37 Carden et al. teach a package, further including a stiffening member (8) and having an orifice there through overlying the orifice in the bonding member.

Regarding claim 39, Carden et al. teach an electronic package, wherein the stiffening member is electrically conductive (Col. 3, lines 34 – 39).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Towle et al. as applied to claim 1 above, and further in view of US Patent No. 6,734,535 to Hashimoto.

Towle et al. do not teach an electronic package substrate, wherein the circuitized member is a polyimide substrate, Hashimoto teaches an electronic package substrate, wherein the circuitized member (20) is a polyimide substrate (Col. 5, lines 37 – 40). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of Hashimoto into the device taught by Towle et al., since it is desirable to use materials that are known and well suited for the intended use.

With respect to the traces being photo-lithographically developed, this is considered a product-by-process limitation. “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

11. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carden et al. in view of admitted prior art.

Carden et al. teach a package further including an array of solder bumps (6), which would have included solder pads. Carden et al. do not teach that the melting temperature of the solder is above 215 degrees C. Admitted prior art teaches that it is typical in the art to use solder having a melting temperature above 215 degrees Celsius, or more specifically above 225 – 235 degrees (paragraph [0028]). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of admitted prior art

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into the device taught by Carden et al. since it is desirable to use materials that are known to be well suited for the intended use.

12. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carden et al. as applied to claim 33 above, and further in view of Towle et al.

Carden et al. do not teach a package, wherein the stiffening member is electrically nonconductive. Towle et al. teach a package wherein the stiffening member (14) is not electrically conductive (paragraph [0014]).

13. Claims 40 – 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carden et al. as applied to claim 33 above, and further in view of US Patent No. 6,472,762 to Kutlu.

Regarding claim 40, Carden et al. do not teach a package including a heat sink and second bonding member, the second bonding member being thermally conductive and bonding the heat sink to the flip chip. Kutlu teaches a package including a heat sink (24) and second bonding member (26), the second bonding member being thermally conductive and bonding the heat sink to the flip chip. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of Kutlu into the device taught by Carden et al, since it is desirable to remove excess heat from the chip.

Regarding claim 41, Carden et al. do not teach a heat sink and thermally conductive, cured adhesive paste bonding the heat sink to the flip chip. Kutlu teaches a package including a heat sink (24) and thermally conductive bond material (26) bonding the heat sink to the flip chip. It would have been obvious to one of ordinary skill in the

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art to incorporate the teaching of Kutlu into the device taught by Carden et al. for reasons discussed above. Neither Carden et al., nor Kutlu teach a cured adhesive paste. It would have been obvious to one of ordinary skill in the art to use a cured adhesive paste, since it is a known material that is well suited for the intended use.

Regarding claims 42 and 43, Carden et al. do not teach a package including an electrical ground plane formed by an electrically conductive heat sink and an electrically conductive bonding member, both connectable to ground. Kutlu teaches a package including an electrical ground plane formed by an electrically conductive heat sink (104; Col. 2, lines 63 – 66) and an electrically conductive bonding member (108; Col. 3, lines 6 – 8), both connectable to ground, which could also function as a shield since it is connectable to ground. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Kutlu into the device taught by Carden et al., since it is desirable to remove excess heat from the die.

Allowable Subject Matter

14. Claims 12 – 30 and 44 – 47 are allowed.

15. Claims 9, 11, 35 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach a package including “a support member bonded to the other planar surface, blocking the orifices...”, or “a substrate frame

surrounding each electronic package substrate, said frame is a support for the flip chip package substrate strip”.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas W Owens
Examiner
Art Unit 2811